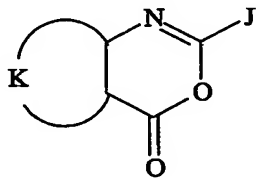
CLAIMS

What is claimed is:

1. A method for preparing a fused oxazinone, comprising:

contacting a carboxylic acid with a sulfonyl chloride and an isatoic anhydride in the presence of a tertiary amine to form the fused oxazinone, the nominal mole ratio of said sulfonyl chloride to said carboxylic acid being from about 1.0 to 1.5 and the nominal mole ratio of said isatoic anhydride to said carboxylic acid is from about 0.8 to 1.2.

2. The method of Claim 1 wherein the fused oxazinone is a compound of Formula **1**



1

wherein

J is an optionally substituted carbon moiety; and

K is, together with the two contiguous linking carbon atoms, a fused phenyl ring or a fused 5- or 6-membered heteroaromatic ring, each ring optionally substituted;

the carboxylic acid is a compound of Formula **2**

$$J\text{–}CO_2H$$

2

wherein J is defined as in Formula 1;

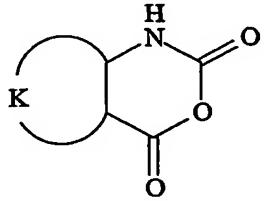
the sulfonyl chloride is a compound of Formula **4**

$$LS(O)_2Cl$$

4

wherein L is selected from alkyl, haloalkyl, and phenyl optionally substituted with from one to three substituents independently selected from alkyl or halogen; and

the isatoic anhydride is a compound of Formula **5**



5

wherein K is defined as in Formula 1.

3. The method of Claim 2 wherein the nominal mole ratio of the isatoic anhydride to carboxylic acid is from about 0.9 to 1.1.

4. The method of Claim 3 wherein the nominal mole ratio of the tertiary amine to carboxylic acid is from about 2.0 to 4.0.

5. The method of Claim 2 wherein

J is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_8 cycloalkyl or C_3–C_8 cycloalkenyl, each optionally substituted; or

J is a phenyl ring, a benzyl group, a benzoyl group, a 5- or 6-membered heteroaromatic ring, an aromatic 8-, 9- or 10-membered fused carbobicyclic ring system, an aromatic 8-, 9- or 10-membered fused heterobicyclic ring system or a 5- or 6-membered nonaromatic heterocyclic ring optionally including one or two ring members selected from the group consisting of C(=O), SO or $S(O)_2$, each optionally substituted.

6. The method of Claim 5 wherein

K is, together with the two contiguous linking carbon atoms, a fused phenyl ring optionally substituted with from one to four substituents independently selected from G, U, W or R^{13}; or a fused 5- or 6-membered heteroaromatic ring optionally substituted with from one to three substituents independently selected from G, U, W or R^{13};

J is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_8 cycloalkyl or C_3–C_8 cycloalkenyl, each optionally substituted with one or more substituents selected from the group consisting of R^{12}, halogen, CN, NO_2, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 alkylamino, C_2–C_8 dialkylamino, C_3–C_6 cycloalkylamino, and (C_1–C_4 alkyl)(C_3–C_6 cycloalkyl)amino; or

J is a phenyl ring, a benzyl group, a benzoyl group, a 5- or 6-membered heteroaromatic ring, an aromatic 8-, 9- or 10-membered fused carbobicyclic ring system, an aromatic 8-, 9- or 10-membered fused heterobicyclic ring system or a 5- or 6-membered nonaromatic heterocyclic ring optionally including one or two ring members selected from the group consisting of C(=O), SO or $S(O)_2$, each optionally substituted with from one to four substituents independently selected from G, U, W or R^{13};

each G is a 5- or 6-membered nonaromatic heterocyclic ring optionally including one or two ring members selected from the group consisting of C(=O), SO or $S(O)_2$, each optionally substituted with from one to four substituents independently selected from W;

each U is a phenyl ring, a benzyl group, a benzoyl group, a 5- or 6-membered heteroaromatic ring, an aromatic 8-, 9- or 10-membered fused carbobicyclic ring system, an aromatic 8-, 9- or 10-membered fused heterobicyclic ring system, each optionally substituted with from one to four substituents independently selected from W;

each W is independently C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_3–C_6 cycloalkyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, C_3–C_6 halocycloalkyl, halogen, CN, NO_2, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 alkylamino, C_2–C_8 dialkylamino, C_3–C_6 cycloalkylamino, (C_1–C_4 alkyl)(C_3–C_6 cycloalkyl)amino or C_3–C_6 trialkylsilyl;

each R^{12} is independently $R^{19}C(=E)$-; $R^{19}C(=E)L$-; $R^{19}LC(=E)$-; $(R^{19})LC(=E)L$-; $-O(Q=)P(OR^{19})_2$; $-SO_2LR^{18}$; or $R^{19}SO_2L$-;

each R^{13} is $B(OR^{17})_2$; NH_2; SH; thiocyanato; C_3–C_8 trialkylsilyloxy; C_1–C_4 alkyldisulfide; SF_5; $R^{19}C(=E)$-; $R^{19}C(=E)M$-; $R^{19}MC(=E)$-; $(R^{19})MC(=E)M$-; $-OP(=Q)(OR^{19})_2$; $-S(O)_2MR^{19}$; $R^{19}S(O)_2M$-;

each E is independently O, S, NR^{15}, NOR^{15}, $NN(R^{15})_2$, N-S=O, N-CN or N-NO_2;

each M is independently O, NR^{18} or S;

Q is O or S;

each R^{15} and each R^{19} is independently H; C_1–C_6 alkyl optionally substituted with one or more substituents selected from the group consisting of CN, NO_2, hydroxy, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkylthio, C_1–C_4 haloalkylsulfinyl, C_1–C_4 haloalkylsulfonyl, C_1–C_4 alkylamino, C_2–C_8 dialkylamino, CO_2H, C_2–C_6 alkoxycarbonyl, C_2–C_6 alkylcarbonyl, C_3–C_6 trialkylsilyl, and a phenyl ring optionally substituted with one to three substituents independently selected from W; C_1–C_6 haloalkyl; C_3–C_6 cycloalkyl; or a phenyl ring optionally substituted with from one to three substituents independently selected from W;

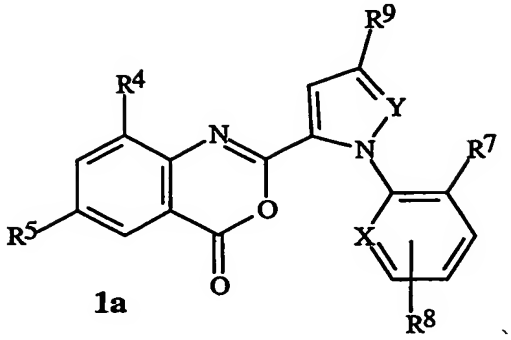
each R^{17} is independently H or C_1–C_4 alkyl; or

$B(OR^{17})_2$ can form a ring wherein the two oxygen atoms are linked by a chain of two to three carbons optionally substituted with one or two substituents independently selected from methyl or C_2–C_6 alkoxycarbonyl; and

each R^{18} is independently H, C_1–C_6 alkyl or C_1–C_6 haloalkyl.

7. The method of Claim 6 wherein K is, together with the two contiguous linking carbon atoms, a fused phenyl ring optionally substituted with from one to four substituents independently selected from W or R^{13}.

8. The method of Claim 2 wherein the compound of Formula **1** is a compound of Formula **1a**



1a

wherein

X is N or CR^6;

Y is N or CH;

R^4 is C_1–C_4 alkyl or halogen;

R^5 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, CN or halogen;

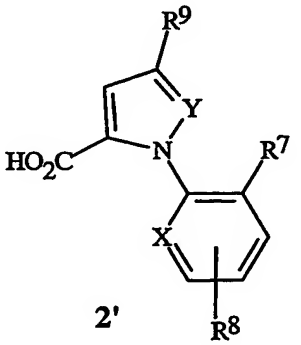
R^6 and R^7 are independently H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, halogen, CN or C_1–C_4 haloalkoxy;

R^8 is H, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_3–C_6 cycloalkyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, C_3–C_6 halocycloalkyl, halogen, CN, NO_2, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 alkylamino, C_2–C_8 dialkylamino, C_3–C_6 cycloalkylamino, (C_1–C_4 alkyl)(C_3–C_6 cycloalkyl)amino, C_2–C_4 alkylcarbonyl, C_2–C_6 alkoxycarbonyl, C_2–C_6 alkylaminocarbonyl, C_3–C_8 dialkylaminocarbonyl or C_3–C_6 trialkylsilyl;

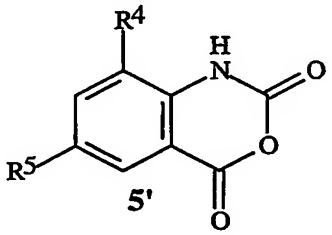
R^9 is CF_3, OCF_3, $OCHF_2$, OCH_2CF_3, $S(O)_pCF_3$, $S(O)_pCHF_2$ or halogen; and

p is 0, 1 or 2;

the compound of Formula **2** is a compound of Formula **2'** and the compound of Formula **5** is a compound of Formula **5'**



2'



5'

wherein the definitions of X, Y, R^4, R^5, R^7, R^8 and R^9 are the same as for Formula **1a**.

9. The method of Claim 8 wherein

X is N;

Y is N;

R^4 is CH_3, F, Cl or Br;

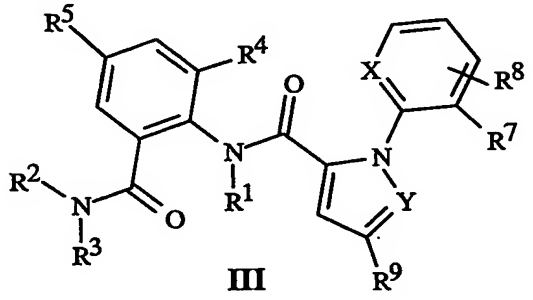
R^5 is CF_3, CN, F, Cl, Br or I;

R^7 is Cl or Br;

R^8 is H; and

R^9 is CF_3, $OCHF_2$, OCH_2CF_3, Cl or Br.

10. A method for preparing a compound of Formula **III**



III

wherein

X is N or CR^6;

Y is N or CH;

R^1 is H;

R^2 is H or CH_3;

R^3 is C_1–C_6 alkyl;

R^4 is C_1–C_4 alkyl or halogen;

R^5 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, CN or halogen;

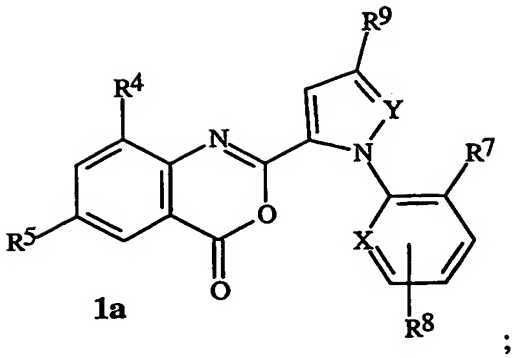
R^6 and R^7 are independently H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, halogen, CN or C_1–C_4 haloalkoxy;

R^8 is H, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_3–C_6 cycloalkyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, C_3–C_6 halocycloalkyl, halogen, CN, NO_2, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 alkylamino, C_2–C_8 dialkylamino, C_3–C_6 cycloalkylamino, (C_1–C_4 alkyl)(C_3–C_6 cycloalkyl)amino, C_2–C_4 alkylcarbonyl, C_2–C_6 alkoxycarbonyl, C_2–C_6 alkylaminocarbonyl, C_3–C_8 dialkylaminocarbonyl or C_3–C_6 trialkylsilyl; and

R^9 is CF_3, OCF_3, $OCHF_2$, OCH_2CF_3, $S(O)_pCF_3$, $S(O)_pCHF_2$ or halogen;

p is 0, 1 or 2;

using a compound of Formula **1a**



1a ;

characterized by:

preparing said compound of Formula **1a** by the method of Claim 8.

11. The method of Claim 10 wherein

X is N;

Y is N;

R^2 is H or CH_3;

R^3 is C_1–C_4 alkyl;

R^4 is CH_3, F, Cl or Br;

R^5 is CF_3, CN, F, Cl, Br or I;

R^7 is Cl or Br;

R^8 is H; and

R^9 is CF_3, $OCHF_2$, OCH_2CF_3, Cl or Br.